

seems to me should be settled once for all, by special dispensation, if no other way is available. While generic names are intended, I suppose, to be merely appellative and not descriptive, I cannot believe that it is for the best interests of science to perpetuate Kuntze's suggestion.

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PASSAIC, N. J.

REVIEWS

A New Handbook of the Genera of Freshwater Algae*

Students and collectors often ask for a convenient work by which to identify the common algae of pond and brook which arouse the interest of every user of a microscope. There has been no good manual to recommend, for the works of Wolle and Cooke, never satisfactory, are quite out of date, and much the same may be said of the more elaborate works of the continental algologists. Professor West has produced a book which will be exceedingly useful, not only to amateur and more advanced students, but to teachers particularly; for within a surprisingly small compass he has given a good summary of recent work on the phylogeny of the algae, and brief but sufficiently clear descriptions to enable one without great difficulty to identify most of the genera of the United States. If disappointment is felt that specific diagnoses are not furnished, it is to be remembered that for a single author to include such in so extensive and diversified a group, would be to produce a work hardly more accurate than those we have found so unusable, as well as unwieldy in size.

The author divides the algae into the six classes, Rhodophyceae, Phaeophyceae, Chlorophyceae, Heterokontae, Bacillariaceae and Myxophyceae (Cyanophyceae). Many will doubt the wisdom of including the last two groups with the higher algae but it will be at least a convenience to have this outline of their genera. The Peridiniaceae have been excluded for lack of space and because of doubt as to their affinities with algae. Similarly, the Characeae are omitted as being of higher organization than algae. It is certainly however, open to question whether the Characeae show

* West, G. S. *A Treatise on the British Freshwater Algae*. Svo. Pp. xvi + 372. f. 1-166. Cambridge, at the University Press, 1904. Price, 10s. 6d., net.

greater affinities with the Archegoniatae, or less affinities with the main groups of algae, than the latter do among themselves. In the arrangement of the classes, and more particularly of the genera and families within the orders, it would be much more convenient for most teachers if the author had proceeded from lower to higher instead of in reverse order.

It is among the green algae that the greatest advance has been made recently and the chief value of this book is in the reclassification of these groups, for the old class Chlorophyceae cannot longer be maintained as a single group. Professor West's scheme is admittedly not original. He has followed the main lines marked out by Bohlin (1901) and Blackman and Tansley (1902); but he has taken only the best features of their rather brilliant and suggestive systems, and fallen back on the more conservative lines suggested by his own wide experience in various groups. The central idea in the recent systems is to go back to different flagellate ancestors for each of the classes of algae. The order Confervales (which might better be called Tribonematales) proposed by Borzi in 1889, and enlarged by Luther to the class Heterokontae, based upon a ciliated unicellular form having yellow-green chromatophores and producing oil rather than starch, on the whole, appears to be a very natural group; but we agree with Professor West that *Vaucheria* is too divergent a form to be included here. The author is wise also (and here he follows Bohlin) in retaining the Conjugatae and Oedogoniales as orders under the Chlorophyceae. The phylogeny of these groups is indeed puzzling, and the proposition of Blackman and Tansley to regard them respectively as classes Akontae and Stephanokontae, coördinate with the Chlorophyceae (Isokontae), furnishes an attractive and well-rounded scheme, but we have no evidence that they have had a similar origin in ciliated unicellular forms. On the contrary, West has argued well for the derivation of the Conjugatae from other filamentous forms. The orders Schizogoniales and Microsporales are here separated from Ulvales and Chaetophorales, and Cladophorales from Siphoneae. The creation of the new family Microthamniaceae appears to be superfluous, for my work has shown that

the zoöspore-formation in *Microthamnion* is most like that of *Myxonema* (*Stigoclonium*), and *Gongrosira* and *Leptosira* may well be placed (as by Blackman and Tansley) in the Trentepohliaceae.

In the matter of nomenclature, the author has shown an open-minded regard for priority, though one may wonder why, while taking up *Choaspis* S. F. Gray for *Sirogonium* Kütz., he does not also revive *Agardhia* of the same work in place of *Mougeotia*. An unusual degree of familiarity with recent American work is evident, and the numerous references to such literature are among many good features which will commend this book to American students and teachers.

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The Teaching of Biology in the Secondary School*

The volume recently issued under the above title is one of the American Teachers Series, edited by Professor James E. Russell, Dean of the Teachers College, Columbia University. The two authors have charge, respectively, of the botanical and zoölogical work in the Teachers College and the present volume consists of two parts, the first on "The Teaching of Botany and of Nature Study," written by Professor Lloyd, and the second on "The Teaching of Zoölogy, including Human Physiology, in the Secondary School," written by Professor Bigelow. As is sufficiently indicated in the titles, the work is not a laboratory manual for the student, but aims to cover the much less occupied field of a manual for teachers. In fact, on the botanical side, "The Teaching Botanist," of Professor Ganong, is the only book known to the reviewer which may fairly be compared with it, a comparison which is invited, not only by the general similarity in the scope of the two works, but also by Professor Lloyd's frequent citation of "The Teaching Botanist" and by the association of Professors Ganong and Lloyd on the committee appointed by the Society for Plant Morphology and Physiology to consider the formulation of a standard college entrance option in botany. Whatever

* Lloyd, F. E., & Bigelow, M. A. The Teaching of Biology in the Secondary School. 8 vo. Pp. i-viii + 1-491. New York, Longmans, Green and Co. 1904. Price, \$1.50.